

English Translation of
JAPANESE PATENT APPLICATION

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A METHOD FOR CLEANING A BULB FOR LIGHTNING

(Omitted)

[Brief Explanation of the Drawing]

The drawing is an explanatory view illustrating an example of a method for cleaning a bulb for lightning according to the present invention.

[Detailed Description of the Invention]

The present invention relates to a method for cleaning a bulb for lightning such as a bulb for fluorescent lamp and the like, wherein water vapor, which has been introduced in an inside of the bulb, is condensed to drops of water at an inner wall of the bulb by cooling an outer wall thereof, so as to refine the bulb with the drops of water.

As a conventional method for cleaning a bulb for fluorescent lamp, there is used a method, wherein water, such as tap water and the like, is introduced inside a glass bulb while being kept cool or warm, to clean directly the bulb. However, in the method, impurities such as dusts and the like adhered to the bulb for fluorescent lamp, or organic and inorganic substances contained in the water remain on a pipe wall as stains when the bulb for fluorescent lamp is dried. Therefore, there exist problems that the stains generate an impure gas after completion of the fluorescent lamps, and that an adhesion of mercury to the stains leads to irregular lightning during operation of the fluorescent lamp. As is already well known, the impure gas results in a shortened lifetime of luminescent flux of the fluorescent lamp and blackening of the pipe wall.

In order to solve the above problems, the present invention provides a method for cleaning a bulb for lightning, wherein, the water vapor, which contains no water-soluble organic and inorganic substances

nor the like, is introduced into the bulb for lightning, and is condensed to the drops of water at the inner wall of the bulb by cooling the outer wall thereof, to clean the bulb with the drops of water. A case of applying the present invention to a bulb for fluorescent lamp will be described with reference to a drawing. The bulb for fluorescent lamp is pre-rinsed with tap water, and water vapor B of a over ten atmosphere is introduced for about 20 to 30 seconds from an upper portion of the bulb for fluorescent lamp through a spraying device 4, while the outside of the bulb for fluorescent lamp 1 is cooled with the water, an air A or the like. The water vapor B that has been introduced in the bulb for fluorescent lamp 1 is contacted with the inner wall of the bulb for fluorescent lamp 1, and condensed to drops of water on the inner wall by the external cooling. The drops of water rinse away the dust adhered to the inner wall of the bulb for fluorescent lamp and the impurities such as organic and inorganic substances and the like, which are contained in the water adhered to the inner wall when the bulb for fluorescent lamp is pre-rinsed with the tap water. The bulb for fluorescent lamp 1 thus cleaned is dried by a gas or electric heat. Wherein, reference number 2 of the drawing is a bulb fixing stage, which is provided with bulb supporting apparatuses 3, 3' and a cooling device 5.

As is specifically described above, the cleaning method according to the present invention uses the water vapor and the external cooling. Water vapor is condensed to the drops of water on the inner wall of the bulb for fluorescent lamp, whereby an advantage can be attained that the impurities on the inner wall of the bulb for fluorescent lamp, especially water-soluble impurities, are absolutely removed. As well, characteristic defects owing to the impurities after the completion of the fluorescent lamp can be prevented since the water vapor containing no impurities leaves no impurities on the pipe wall.

[Claims]

1. A method for cleaning a bulb for lightning, comprising the steps of;

introducing water vapor into a bulb for lightning and condensing the water vapor to drops of water on an inner wall of the bulb by cooling an outer wall thereof; and

cleaning the inner wall by the drops of water.

照明用バルブの洗滌方法

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図面の簡単な説明

図は本発明になる照明用バルブの洗滌方法の1例を示す説明図である。

発明の詳細な説明

本発明は蛍光灯用バルブ等の照明用バルブの内部に水蒸気を送入し照明用のバルブ外面を冷却し前記水蒸気を内壁で水滴とし、前記水滴で洗滌する方法に関するものである。

従来の蛍光灯用バルブの洗滌方法としては水道等の水を冷水または温水状態として前記の水をガラスバルブ内に送入して直接洗滌する方法がとられているが、この方法では蛍光灯用バルブに附着しているゴミ等の不純物あるいは水に含まれている有機物および無機物が蛍光灯用バルブを乾燥した場合に管壁にシミとして残り、蛍光灯完成後不純ガスを発生する原因となり、かつ蛍光灯作動中、前記シミに水銀が附着して発光にムラを生じる欠点があつた。不純ガスが発生すると蛍光灯の

発光光束の低下短寿命、管壁黒下の原因となることはすでに知られているところである。

本発明は上記の欠点を除くために、水溶性の有機物、無機物等を含有することのない水蒸気を照明用バルブ内に送入し、かつ、照明用バルブを外部より冷却し、前記水蒸気を内壁で水滴とし、水滴により洗滌するようにしてなるもので、以下本発明を蛍光灯用バルブに実施した場合を図について説明すれば蛍光灯用バルブを水道水により前洗し噴出装置4より十数気圧の圧力を有する水蒸気Bを蛍光灯用バルブの上部から約20～80秒間送入すると同時に蛍光灯バルブ1の外面を水または空気A等により冷却する。蛍光灯用バルブ1内に送入された水蒸気Bは蛍光灯用バルブ1の内壁と接触し外部冷却のため内壁で水滴となり蛍光灯用バルブ1の内壁に附着しているゴミあるいは水道水にて前洗されたとき、内壁に付着した水に含まれた有機物、無機物等の不純物を洗い落とす。洗滌された蛍光灯用バルブ1はガスまたは電熱によつて乾燥する。なお図中2はバルブ取付台でバルブ支持装置3、3'および冷却装置5を有する。

以上述べたように本発明の洗滌方法は水蒸気を用いかつ外部から冷却するようにしたもので水蒸気は照明灯用バルブ内壁で水滴となり、照明灯用バルブ内壁の不純物特に水溶性の不純物を完全に取り除くことができると共に前記水蒸気は何等の不純物を含有しないので不純物が管壁に残ることはなく従つて照明灯完成後前記不純物による特性の不良を除くことが出来る効果を有する。

特許請求の範囲

1 照明用バルブ内に水蒸気を送入しかつ外壁を冷却して前記水蒸気を内壁で水滴とし、水滴により内壁を洗滌することを特徴とする照明用バルブの洗滌方法。

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